

FILE 'CAPLUS' ENTERED AT 14:45:52 ON 21 SEP 2001  
L1 2 S NAKAGAWA?/IN AND KITANO?/IN AND BLOCK  
L2 1 S WO9955751/PN

FILE 'DPCI' ENTERED AT 14:48:25 ON 21 SEP 2001  
L3 1 S WO9955751/PN

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L3 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2001 ACS  
AN 1998:814226 CAPLUS  
DN 130:154029  
TI Atom Transfer Radical Polymerization of Poly(vinyl ether) Macromonomers  
AU Yamada, Kenji; Miyazaki, Masayuki; Ohno, Kohji; Fukuda, Takeshi;  
Minoda, Masahiko  
CS Institute for Chemical Research, Kyoto University, Uji Kyoto, 611, Japan  
SO Macromolecules (1999), 32(2), 290-293  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
D'R Journal  
LA English  
CC 35-4 (Chemistry of Synthetic High Polymers)  
AB The atom transfer radical polymn. (**ATRP**) of vinyl ether (VE)-based macromonomers with a methacryloyl group at the chain end is studied. Living cationic polymn. of iso-Bu vinyl ether (IBVE) initiated with the HCl adduct of a VE carrying a pendant methacryloyl group in conjunction with ZnI<sub>2</sub> yielded the macromonomer (MA-PIBVE) with a narrow mol. wt. distribution (MWD) (.hivin.Mw/.hivin.Mn < 1.1). The **ATRP** of MA-PIBVE was carried out using a halide initiator and the CuBr/4,4'-di-n-heptyl-2,2'-bipyridine catalytic system. The no.-av. mol. wt. of the polymacromonomer increased in proportion to the monomer conversion, while the MWDs stayed fairly narrow (.hivin.Mw/.hivin.Mn .apprx. 1.2). Thus a novel type of polymacromonomers with controlled chain lengths for both the backbone and the side chain have been synthesized through a combination of living cationic polymn. and **ATRP** techniques.  
ST macromonomer isobutyl vinyl ether polymn; cationic living polymn isobutyl vinyl ether; atom transfer radical polymn macromonomer  
IT Polymerization  
(atom transfer radical; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Living polymerization  
(cationic; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Macromonomers  
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(in combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Cationic polymerization  
(living; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 9003-44-5DP, Isobutyl vinyl ether homopolymer, methacryloyl-terminated, polymers  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 153472-39-0  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalyst; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 10139-47-6, Zinc iodide 11129-27-4, Copper bromide 71071-44-8,  
4,4'-Di-n-heptyl-2,2'-bipyridine  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalyst; in combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
RE.CNT 60  
RE

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Theory and Practice 1992  
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I10 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1997:51149 CAPLUS  
DN 126:186508  
TI Living free radical polymerization of  
macromonomers. Preparation of well defined graft copolymers  
AU Hawker, Craig J.; Mecerreyes, David; Elce, Edmund; Dao, Julian; Hedrick,  
James L.; Barakat, Ibrahim; Dubois, Philippe; Jerome, Robert; Volksen,  
illi  
CS NSF Center Polymeric Interfaces Macromolecular Assemblies, IBM Research  
Division, San Jose, CA, 95120, USA  
SO Macromol. Chem. Phys. (1997), 198(1), 155-166  
CODEN: MCHPES; ISSN: 1022-1352  
PB Huethig & Wepf  
DT Journal  
LA English  
CC 35-8 (Chemistry of Synthetic High Polymers)  
AB Well defined graft copolymers have been synthesized by a  
nitroxide-mediated living free radical process using  
preformed macromonomers. Anal. of the graft systems revealed  
that the macromonomer was efficiently incorporated into the  
polymeric backbone to give block copolymers of controlled mol.  
wt. and narrow polydispersities. An added benefit of the living  
free radical process is that macromonomers, such as  
polylactide or polycaprolactone, which contain reactive functional groups  
can be used to form novel graft systems using this approach.  
Functionalized monomers or polymeric initiators were also used in the  
copolymn. mixt. to give graft systems with a variety of functional groups  
attached to the backbone.  
ST graft polymer living radical polymn  
macromonomer; nitroxide initiator living radical  
polymn macromer  
IT Polyesters, reactions  
RL: PRP (Properties); RCT (Reactant)  
(polystyrene-, graft; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT Polymerization catalysts  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)  
IT Macromonomers  
RL: PRP (Properties); RCT (Reactant)  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)  
IT Living polymerization  
(radical; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT 154554-67-3  
RL: CAT (Catalyst use); USES (Uses)  
(catalyst; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT 9002-88-4D, Polyethylene, acrylate-terminated  
RL: PRP (Properties); RCT (Reactant)  
(macromonomer; properties of graft copolymers synthesized by  
nitroxide-mediated living free radical polymn. of)  
IT 25248-42-4D, Poly(caprolactone), methacrylate-terminated 25736-86-1,  
Poly(ethylene glycol) monomethacrylate 128152-19-2 157170-89-3  
157481-69-1, D,L-Lactide homopolymer ester with hydroxyethyl methacrylate  
RL: PRP (Properties); RCT (Reactant)  
. (macromonomer; properties of graft copolymers synthesized by  
nitroxide-mediated living free radical polymn.  
using)  
IT 106826-12-4P, Ethylene-styrene graft copolymer 109584-39-6P,

Oxirane-styrene graft copolymer 137567-72-7DP, hydrolyzed  
146277-01-2P, Poly(ethylene glycol) monomethacrylate-styrene graft  
copolymer 187455-14-7P, D,L-Lactide-styrene graft copolymer  
187455-15-8P, 4-Chloromethylstyrene-ethylene-styrene graft copolymer  
187455-17-0P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)

IT 81984-60-3

RL: PRP (Properties); RCT (Reactant)  
(properties of graft copolymers synthesized by nitroxide-mediated  
living free radical polymn. using)

IT 137567-72-7P, Caprolactone-styrene graft copolymer 187455-16-9P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(properties of graft copolymers synthesized by nitroxide-mediated  
living free radical polymn. using  
macromonomers)

I10 ANSWER 21 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1998:666154 CAPLUS  
DN 129:260874  
TI Poly(vinyl ethers) as building blocks for new materials  
AU Goethals, Eric J.; Reyntjens, Wouter; Lievens, Serge  
CS Dep. Organic Chem., Polymer Chem. Div., Univ. Ghent, Ghent, B-9000, Belg.  
SO Macromol. Symp. (1998), 132(International Symposium on Ionic  
Polymerization, 1997), 57-64  
CODEN: MSYMEC; ISSN: 1022-1360  
PB Wiley-VCH Verlag GmbH  
DT Journal; General Review  
LA English  
CC 35-0 (Chemistry of Synthetic High Polymers)  
AB A review with 9 refs. on the authors' own work. The **living cationic** polymn. of vinyl ethers was used to prep. a no. of new polymers with special properties. Sequential polymn. of the hydrophilic Me vinyl ether (MVE) and the hydrophobic octadecyl vinyl ether (ODVE) has lead to amphiphilic **block** copolymers with emulsifying properties for water/decane mixts. Poly(vinyl ether) **macromonomers** were obtained by end-capping of living polymers with hydroxyethyl acrylate. Copolymn. of polyODVE **macromonomer** with usual acrylates lead to highly branched hydrophobic polymers. When the end-capping was performed with bifunctionally living polymers, the corresponding bis-**macromonomers** were obtained. Copolymn. of such bis-**macromonomers** with styrene or Bu acrylate, leads to the formation of segmented polymer networks. In the case of polyODVE-poly(Bu acrylate), these networks showed a pronounced phase sepn. Due to the crystallinity of the polyODVE domains, these materials showed shape memory properties.  
ST polyvinyl ether **macromonomer block** polymn review  
IT Vinyl polymers  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(ether; prepn. of poly(vinyl ethers) and use as **macromonomer**  
for **block** polymers)  
IT Vinyl ethers  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(polymers; prepn. of poly(vinyl ethers) and use as **macromonomer**  
for **block** polymers)  
IT **Macromonomers**  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation)  
(prepn. of poly(vinyl ethers) and use as **macromonomer** for  
**block** polymers)  
IT 107-25-5DP, Methyl vinyl ether, polymers 109-53-5DP, Isobutyl vinyl  
ether, polymers 930-02-9DP, Octadecyl vinyl ether, polymers  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation)  
(prepn. of poly(vinyl ethers) and use as **macromonomer** for  
**block** polymers)

L10 ANSWER 14 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1999:558868 CAPLUS  
DN 132:194729  
TI Atom transfer radical polymerization of poly(vinyl ether)  
**macromonomers**  
AU Minoda, Masahiko; Yamada, Kenji; Miyazaki, Masayuki; Endo, Masaki; Ohno, Kohji; Fukuda, Takeshi  
CS Institute for Chemical Research, Kyoto University, Kyoto, 611-0011, Japan  
SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1999), 40(2), 399-400  
CODEN: ACPPAY; ISSN: 0032-3934  
PB American Chemical Society, Division of Polymer Chemistry  
DT Journal  
LA English  
CC 35-4 (Chemistry of Synthetic High Polymers)  
AB The present paper focuses on the atom transfer radical polymn. (ATRP) of vinyl ether (VE)-based **macromonomers** with a methacryloyl group at the chain end. **Living cationic** polymn. of iso-Bu VE (IBVE) initiated with the HCl adduct of a VE carrying a pendant methacryloyl group in conjunction with ZnI<sub>2</sub> yielded the **macromonomer** (MA-PIBVE) with a narrow mol. wt. distribution (MWD) (M<sub>w</sub>/M<sub>n</sub> < 1.1). The ATRP of MA-PIBVE was carried out using a halide initiator and the CuBr/4,4'-di-n-heptyl-2,2'-bipyridine catalytic system. The no.-av. mol. wt. of the polymacromonomer increased in proportion to the monomer conversion, while the MWDs stayed fairly narrow (M<sub>w</sub>/M<sub>n</sub> ~ 1.2). Thus polymacromonomers with controlled chain lengths for both the backbone and the side chain have been synthesized for the first time through a combination of **living cationic** polymn. and ATRP techniques. The ATRP of the **macromonomer** having a **block** copolymer structure was also investigated.  
ST atom transfer radical polymn vinyl ether **macromonomer**  
IT Molecular weight  
    Molecular weight distribution  
        (atom transfer radical polymn. of poly(vinyl ether)  
            **macromonomers** and their mol. wt. characteristics)  
IT **Macromonomers**  
    RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
        (atom transfer radical polymn. of poly(vinyl ether)  
            **macromonomers** and their mol. wt. characteristics)  
IT Polymerization  
    (atom transfer, radical; atom transfer radical polymn. of poly(vinyl ether) **macromonomers** and their mol. wt. characteristics)  
IT Polymerization catalysts  
    (radical, atom-transfer; atom transfer radical polymn. of poly(vinyl ether) **macromonomers** and their mol. wt. characteristics)  
IT 9003-44-5P, Isobutyl vinyl ether homopolymer  
    RL: SPN (Synthetic preparation); PREP (Preparation)  
        (2-(1-Chloroethoxy)ethyl methacrylate-functionalized; atom transfer radical polymn. of poly(vinyl ether) **macromonomers** and their mol. wt. characteristics)  
IT 600-00-0, Ethyl-2-bromoisobutyrate 7787-70-4, Copper bromide (CuBr)  
71071-44-8, 4,4'-Di-n-heptyl-2,2'-bipyridine  
    RL: CAT (Catalyst use); USES (Uses)  
        (atom transfer radical polymn. of poly(vinyl ether)  
            **macromonomers** and their mol. wt. characteristics)  
IT 600-00-0DP, reaction products with poly(vinyl ether) 9003-44-5DP,  
methacryloyl-endcapped, bromine-terminated 170713-14-1P  
    RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
        (atom transfer radical polymn. of poly(vinyl ether)  
            **macromonomers** and their mol. wt. characteristics)  
IT 109-53-5, Isobutyl vinyl ether 153472-39-0 170713-12-9  
    RL: RCT (Reactant)  
        (atom transfer radical polymn. of poly(vinyl ether)  
            **macromonomers** and their mol. wt. characteristics)  
RE.CNT 14  
RE

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- (8) Percec, V; Macromolecules 1995, V28, P7970 CAPLUS
- (9) Sawamoto, M; Makromol Chem, Macromol Symp 1988, V13/14, P513
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L10 ANSWER 21 OF 39 CAP

L10 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1995:653050 CAPLUS  
DN 123:33754  
TI Narrow Polydispersity **Block** Copolymers by Free-Radical  
Polymerization in the Presence of **Macromonomers**  
AU Krstina, Julia; Moad, Graeme; Rizzardo, Ezio; Winzor, Catherine L.; Berge,  
Charles T.; Fryd, Michael  
CS Division of Chemicals and Polymers, CSIRO, Clayton, 3169, Australia  
SO Macromolecules (1995), 28(15), 5381-5  
CODEN: MAMOBX; ISSN: 0024-9297  
DT Journal  
LA English  
CC 35-4 (Chemistry of Synthetic High Polymers)  
AB A new method for producing polymers of controlled mol. wt. and narrow  
polydispersity is described. The method can also be used to prep. high  
purity **block** copolymers. The procedure is based on free-radical  
polymn. in the presence of **macromonomers** which react by an  
addn.-fragmentation mechanism and can be considered as a new form of  
**living radical** polymn. The chem. is illustrated through  
syntheses of **block** copolymers, with polydispersity as low as  
1.2, based on methacrylate monomers. The procedure is compatible with the  
use of acid monomers (e.g. methacrylic acid).  
ST butyl methacrylate polymn **macromonomer** narrow polydispersity;  
phenyl methacrylate **macromonomer** **block** polymn  
IT Molecular weight  
(polydispersity; mechanism in radical polymn. of monomer and  
**macromonomer** to produce **block** copolymers with narrow  
polydispersity)  
IT Polymerization  
(radical, addn.-fragmentation; mechanism in radical polymn. of monomer  
and **macromonomer** to produce **block** copolymers with  
narrow polydispersity)  
IT 107404-23-9P, Butyl methacrylate-methyl methacrylate **block**  
copolymer 164456-79-5P, Butyl methacrylate-phenyl methacrylate  
**block** copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(mechanism in radical polymn. of monomer and **macromonomer** to  
produce **block** copolymers with narrow polydispersity)

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2001 ACS

AN 1999:708808 CAPLUS

DN 131:337537

TI Block copolymer

IN Nakagawa, Yoshiki; Fujita, Masayuki; Kitano, Kenichi;

Hiro, Tomoki; Kimura, Katsuhiko

PA Kaneka Corp., Japan

SO PCT Int. Appl., 70 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM C08F290-02

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 39

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9955751	A1	19991104	WO 1999-JP2273	19990428
	W: CA, CN, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 992519	A1	20000412	EP 1999-917208	19990428
	R: BE, DE, FR, GB, IT				
PRAI	JP 2000198825	A2	20000718	JP 1999-122260	19990428
	JP 1998-119291	A	19980428		
	JP 1998-147809	A	19980528		
	JP 1998-151571	A	19980601		
	JP 1998-207328	A	19980723		
	JP 1998-207329	A	19980723		
	JP 1998-234428	A	19980820		
	JP 1998-306233	A	19981028		
	JP 1998-147808	A	19980528		
	WO 1999-JP2273	W	19990428		

AB A **block** copolymer which comprises any of various polymers (polyolefins, polyethers, polyesters, polysiloxanes) and a polymer formed by radical living polymn. or cationic living polymn. and can be easily produced without the need of the difficult optimization of polymn. conditions, etc. The **block** copolymer is produced by adding polymer with alkenyl group  $\text{CH}_2=\text{C}(\text{R}1)$  [ $\text{R}1 = \text{H}$ , C1-20 hydrocarbyl] to a radical living polymn. system with catalysts contg.  $\text{C}(\text{Ar})(\text{R}) (\text{X})$ , [ $\text{Ar} =$  aryl;  $\text{R} = \text{H}$ , C hydrocarbyl;  $\text{X} = \text{Cl}, \text{Br}, \text{I}$ ]; or cationic living polymn. system. with catalysts  $\text{C}(\text{CO}_2\text{R}) (\text{R}2) (\text{X})$  [ $\text{R} = \text{H}$ , C1-20 hydrocarbyl;  $\text{R}2 = \text{Me}$  or  $\text{Et}$ ,  $\text{X} = \text{Cl}, \text{Br}, \text{I}$ ].

ST **block** copolymer polyolefin polyether polyester polysiloxane prepn catalyst; radical living polymn catalyst **block** copolymer prepn; cationic living polymn catalyst **block** copolymer prepn

IT Polymers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(**block**; prepn. and mech. properties of **block**  
copolymers of polyolefins, polyethers, polyesters, polysiloxanes by  
radical living polymn. or cationic living polymn.)

IT Polymerization

Polymerization catalysts  
(cationic, living; prepn. and mech. properties of **block**  
copolymers of polyolefins, polyethers, polyesters, polysiloxanes by  
radical living polymn. or cationic living polymn.)

IT Polymerization

Polymerization catalysts  
(living, radical; prepn. and mech. properties of **block**  
copolymers of polyolefins, polyethers, polyesters, polysiloxanes by  
radical living polymn. or cationic living polymn.)

IT 934-53-2 3030-47-5 7374-80-3 7550-45-0, Titanium tetrachloride, uses  
7758-89-6, Cuprous chloride 7787-70-4, Cuprous bromide 37275-48-2,  
Bipyridine

RL: CAT (Catalyst use); USES (Uses)  
(prepn. and mech. properties of **block** copolymers of

polyolefins, polyethers, polyesters, polysiloxanes by radical living polymn. or cationic living polymn.)

IT 34962-76-0P 68508-49-6P  
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)  
(prepn. and mech. properties of **block** copolymers of  
polyolefins, polyethers, polyesters, polysiloxanes by radical living  
polymn. or cationic living polymn.)

IT 107-05-1DP, Allyl chloride, reaction products with hydrogenated  
polyisoprene 141-32-2DP, Butyl acrylate, **block** copolymer  
762-72-1DP, reaction products with polyisoprene 2916-14-5DP, Allyl  
chloroacetate, reaction products with polycaprolactone 9003-27-4DP,  
Polyisobutylene, reaction products with allyl chloride 9003-31-0DP,  
Polyisoprene, hydrogenated, reaction products with allyl chloride  
9042-19-7P, Polypropylene glycol allyl ether 24980-41-4DP,  
Polycaprolactone, hydroxy-terminated, reaction products with allyl  
chloroacetate 50658-01-0P 109671-82-1P, Isobutylene-styrene  
**block** copolymer 110772-34-4P 132613-74-2P 249729-13-3P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and mech. properties of **block** copolymers of  
polyolefins, polyethers, polyesters, polysiloxanes by radical living  
polymn. or cationic living polymn.)

RE.CNT 17

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- (3) CPC International Inc; CA 1123537 A CAPLUS
- (4) CPC International Inc; GB 1556585 A CAPLUS
- (5) CPC International Inc; FR 2352008 A CAPLUS
- (6) CPC International Inc; FR 2352008 B CAPLUS
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L10 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1995:653050 CAPLUS  
DN 123:33754  
TI Narrow Polydispersity **Block** Copolymers by Free-Radical  
Polymerization in the Presence of **Macromonomers**  
AU Krstina, Julia; Moad, Graeme; Rizzato, Ezio; Winzor, Catherine L.; Berge,  
Charles T.; Fryd, Michael  
CS Division of Chemicals and Polymers, CSIRO, Clayton, 3169, Australia  
SO Macromolecules (1995), 28(15), 5381-5  
CODEN: MAMOBX; ISSN: 0024-9297  
DT Journal  
LA English  
CC 35-4 (Chemistry of Synthetic High Polymers)  
AB A new method for producing polymers of controlled mol. wt. and narrow  
polydispersity is described. The method can also be used to prep. high  
purity **block** copolymers. The procedure is based on free-radical  
polymn. in the presence of **macromonomers** which react by an  
addn.-fragmentation mechanism and can be considered as a new form of  
living radical polymn. The chem. is illustrated through  
syntheses of **block** copolymers, with polydispersity as low as  
1.2, based on methacrylate monomers. The procedure is compatible with the  
use of acid monomers (e.g. methacrylic acid).  
ST butyl methacrylate polymn **macromonomer** narrow polydispersity;  
phenyl methacrylate **macromonomer** **block** polymn  
IT Molecular weight  
(polydispersity; mechanism in radical polymn. of monomer and  
**macromonomer** to produce **block** copolymers with narrow  
polydispersity)  
IT Polymerization  
(radical, addn.-fragmentation; mechanism in radical polymn. of monomer  
and **macromonomer** to produce **block** copolymers with  
narrow polydispersity)  
IT 107404-23-9P, Butyl methacrylate-methyl methacrylate **block**  
copolymer 164456-79-5P, Butyl methacrylate-phenyl methacrylate  
**block** copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(mechanism in radical polymn. of monomer and **macromonomer** to  
produce **block** copolymers with narrow polydispersity)

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L10 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2001 ACS  
AN 1997:51149 CAPLUS  
DN 126:186508  
TI Living free radical polymerization of  
macromonomers. Preparation of well defined graft copolymers  
AU Hawker, Craig J.; Mecerreyes, David; Elce, Edmund; Dao, Julian; Hedrick,  
James L.; Barakat, Ibrahim; Dubois, Philippe; Jerome, Robert; Volksen,  
illi  
CS NSF Center Polymeric Interfaces Macromolecular Assemblies, IBM Research  
Division, San Jose, CA, 95120, USA  
SO Macromol. Chem. Phys. (1997), 198(1), 155-166  
CODEN: MCHPES; ISSN: 1022-1352  
PB Huethig & Wepf  
DT Journal  
LA English  
CC 35-8 (Chemistry of Synthetic High Polymers)  
AB Well defined graft copolymers have been synthesized by a  
nitroxide-mediated living free radical process using  
preformed macromonomers. Anal. of the graft systems revealed  
that the macromonomer was efficiently incorporated into the  
polymeric backbone to give block copolymers of controlled mol.  
wt. and narrow polydispersities. An added benefit of the living  
free radical process is that macromonomers, such as  
polylactide or polycaprolactone, which contain reactive functional groups  
can be used to form novel graft systems using this approach.  
Functionalized monomers or polymeric initiators were also used in the  
copolymer. mixt. to give graft systems with a variety of functional groups  
attached to the backbone.  
ST graft polymer living radical polymn  
macromonomer; nitroxide initiator living radical  
polymn macromer  
IT Polyesters, reactions  
RL: PRP (Properties); RCT (Reactant)  
(polystyrene-, graft; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT Polymerization catalysts  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)  
IT Macromonomers  
RL: PRP (Properties); RCT (Reactant)  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)  
IT Living polymerization  
(radical; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT 154554-67-3  
RL: CAT (Catalyst use); USES (Uses)  
(catalyst; properties of graft copolymers synthesized by a  
nitroxide-mediated living free radical process  
using pre-formed macromonomers)  
IT 9002-88-4D, Polyethylene, acrylate-terminated  
RL: PRP (Properties); RCT (Reactant)  
(macromonomer; properties of graft copolymers synthesized by  
nitroxide-mediated living free radical polymn. of)  
IT 25248-42-4D, Poly(caprolactone), methacrylate-terminated 25736-86-1,  
Poly(ethylene glycol) monomethacrylate 128152-19-2 157170-89-3  
157481-69-1, D,L-Lactide homopolymer ester with hydroxyethyl methacrylate  
RL: PRP (Properties); RCT (Reactant)  
(macromonomer; properties of graft copolymers synthesized by  
nitroxide-mediated living free radical polymn.  
using)  
IT 106826-12-4P, Ethylene-styrene graft copolymer 109584-39-6P,

D U  
NE

Oxirane-styrene graft copolymer 137567-72-7DP, hydrolyzed  
146277-01-2P, Poly(ethylene glycol) monomethacrylate-styrene graft  
copolymer 187455-14-7P, D,L-Lactide-styrene graft copolymer  
187455-15-8P, 4-Chloromethylstyrene-ethylene-styrene graft copolymer  
187455-17-0P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(properties of graft copolymers synthesized by a nitroxide-mediated  
living free radical process using pre-formed  
macromonomers)

IT 81984-60-3  
RL: PRP (Properties); RCT (Reactant)  
(properties of graft copolymers synthesized by nitroxide-mediated  
living free radical polymn. using)  
IT 137567-72-7P, Caprolactone-styrene graft copolymer 187455-16-9P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(properties of graft copolymers synthesized by nitroxide-mediated  
living free radical polymn. using  
macromonomers)

L3 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2001 ACS  
AN 1998:814226 CAPLUS  
DN 130:154029  
TI Atom Transfer Radical Polymerization of Poly(vinyl ether) Macromonomers  
AU Yamada, Kenji; Miyazaki, Masayuki; Ohno, Kohji; Fukuda, Takeshi;  
Minoda, Masahiko  
CS Institute for Chemical Research, Kyoto University, Uji Kyoto, 611, Japan  
SO Macromolecules (1999), 32(2), 290-293  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
CC 35-4 (Chemistry of Synthetic High Polymers)  
AB The atom transfer radical polymn. (**ATRP**) of vinyl ether (VE)-based macromonomers with a methacryloyl group at the chain end is studied. Living cationic polymn. of iso-Bu vinyl ether (IBVE) initiated with the HCl adduct of a VE carrying a pendant methacryloyl group in conjunction with ZnI<sub>2</sub> yielded the macromonomer (MA-PIBVE) with a narrow mol. wt. distribution (MWD) (.hivin.Mw/.hivin.Mn < 1.1). The **ATRP** of MA-PIBVE was carried out using a halide initiator and the CuBr/4,4'-di-n-heptyl-2,2'-bipyridine catalytic system. The no.-av. mol. wt. of the polymacromonomer increased in proportion to the monomer conversion, while the MWDs stayed fairly narrow (.hivin.Mw/.hivin.Mn .apprx. 1.2). Thus a novel type of polymacromonomers with controlled chain lengths for both the backbone and the side chain have been synthesized through a combination of living cationic polymn. and **ATRP** techniques.  
ST macromonomer isobutyl vinyl ether polymn; cationic living polymn isobutyl vinyl ether; atom transfer radical polymn macromonomer  
IT Polymerization  
(atom transfer radical; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Living polymerization  
(cationic; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Macromonomers  
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(in combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT Cationic polymerization  
(living; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 9003-44-5DP, Isobutyl vinyl ether homopolymer, methacryloyl-terminated, polymers  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 153472-39-0  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalyst; combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
IT 10139-47-6, Zinc iodide 11129-27-4, Copper bromide 71071-44-8,  
4,4'-Di-n-heptyl-2,2'-bipyridine  
RL: CAT (Catalyst use); USES (Uses)  
(polymn. catalyst; in combined use of living cationic polymn. and atom transfer radical polymn. in synthesis of iso-Bu vinyl ether-based macromonomers and their well-defined polymacromonomers)  
RE.CNT 60  
RE

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